

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) An image processing apparatus ~~characterized by~~ comprising:

reduced image generation means for generating a reduced image based on a logarithmic luminance  $\log L(p)$  of a frame ~~from an input image~~;

correction information acquisition means for acquiring correction information of the ~~input image~~ frame based on the reduced image; and

grayscale conversion means for converting grayscale of the frame ~~input image~~;

wherein the grayscale conversion means corrects contrast of the frame ~~input image~~ using the correction information, as a processing to be performed before and/or after the grayscale is converted.

2. (Currently Amended) The image processing apparatus according to claim 1, ~~characterized by~~ further comprising:

smoothing means for generating a smoothed image having luminance  $L_c$  of pixels composing the frame ~~input image~~ smoothed based on interpolation calculation using pixels composing the reduced image,

wherein the grayscale conversion means ~~generate~~ generates a contrast-corrected image based on luminance  $L_c$  of pixels composing the frame image, luminance  $L_1$  of pixels composing the smoothed image, and a predetermined gain value  $g$ .

3. (Currently Amended) The image processing apparatus according to claim 1, ~~characterized by~~ further comprising:

smoothing means for generating a smoothed image having luminance  $L_c$  of pixels composing the frame input image smoothed based on interpolation calculation using pixels composing the reduced image; and

gain value setting means for setting a gain value  $g$  used for correcting the contrast;

wherein the grayscale conversion means ~~generate~~ generates a contrast-corrected image based on luminance  $L_c$  of pixels composing the frame input image, luminance  $L_1$  of pixels composing the smoothed image, and a predetermined gain value  $g$ ; and

the gain value setting means can be configured so as to set the gain value  $g$  based on input initial gain value  $g_0$ , reference gain value 1, and an attenuation value  $\text{attn}(Th_1, Th_2, L_c)$  calculated using a first luminance threshold value  $Th_1$ , a second luminance threshold value  $Th_2$ , and luminance  $L_c$  of pixels composing the frame input image.

4. (Currently Amended) The image processing apparatus according to claim 1, ~~characterized by~~ further comprising:

conversion means for generating a tone-converted image by converting luminance  $L$  of pixels composing the frame input image based on a conversion function;

smoothing means for generating a smoothed image by smoothing luminance  $L_c$  of pixels composing the tone-converted image; and

gain value setting means for setting a gain value  $g$  used for correcting the contrast based on an initial gain value  $g_0$  which expresses an inverse  $1/\gamma$  of a slope  $\gamma$  of the conversion function;

wherein the contrast correction means ~~generate~~ generates a contrast-corrected image based on luminance  $L_c$  of pixels composing the tone-converted image, luminance  $L_1$  of pixels composing the smoothed image, and a gain value  $g$ ; and

the gain value setting means ~~set~~ sets the gain value  $g$  based on input initial gain value  $g_0$ , reference gain value 1, and an attenuation value  $\text{attn}(Th_1, Th_2, L_c)$  calculated using a first luminance threshold value  $Th_1$ , a second luminance threshold value  $Th_2$ , and luminance  $L_c$  of pixels composing the tone-converted image.

5. (Currently Amended) The image processing apparatus according to claim 1, ~~characterized in that:~~

wherein the reduced image generation means ~~generate~~ generates a reduced image by converting the frame input image into a the tone-converted image based on a the conversion function and reducing a size of the tone-converted image;

the correction information acquisition means ~~acquire~~ acquires correction information including a slope of the conversion function; and

the grayscale conversion means ~~correct~~ corrects contrast of the tone-converted image based on the reduced image and the slope of the conversion function.

6. (Canceled)

7. (Currently Amended) The image processing apparatus according to claim 5, ~~characterized by further comprising:~~

hold means for holding the reduced image generated by the reduced image generation means and the correction information acquired by the correction means;

wherein the hold means holds the reduced image corresponding to a previous frame's image and a slope of the conversion function applied to the previous frame's image, and the grayscale conversion means corrects the contrast of the tone-converted image based on the reduced image of the previous frame and the slope of the conversion function, both stored in the hold means.

8. (Currently Amended) An image processing method ~~characterized by~~ comprising:

~~a reduced image generation step for generating a reduced image based on a~~  
logarithmic luminance  $\log L(p)$  of a frame from an input image;

~~a correction information acquisition step for acquiring a correction information of~~  
the frame input image based on the reduced image; and

~~a grayscale conversion step for converting grayscale of the frame input image;~~

wherein the grayscale conversion step corrects contrast of the frame input image using the correction information, as a processing to be performed before and/or after the grayscale is converted.